

WHAT IS CLAIMED IS:

1. An image pickup apparatus comprising:
a plurality of pixels arranged in a matrix form;
means for adding together, in the oblique
5 direction, at least two pixel signals that output a
first color signal;
means for adding together, in the horizontal
direction, at least two pixel signals that output a
second color signal; and
10 means for adding together, in the horizontal
direction, at least two pixel signals that output a
third color signal.
2. An image pickup apparatus according to claim
15 1, wherein said first color signal is a G (green)
signal, and said second and said third signals are R
(red) and B (blue) signals.
3. An image pickup apparatus according to claim
20 1, further comprising:
switching means for switching between means for
independently reading said pixel signals and means for
adding and reading said pixel signals for each color.
- 25 4. An image pickup apparatus according to claim
1, further comprising:
scanning switching means for switching between

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interlaced scanning and sequential scanning each on a plurality of lines basis.

5. An image pickup apparatus comprising:
5 a plurality of pixels arranged two-dimensionally;
first and second horizontal output lines that are
vertically arranged and oriented differently; and
reading means for adding together signals produced
by said plurality of pixels that output said first
10 color signal and reading out the result from said first
horizontal output line, and for adding together signals
produced by said plurality of pixels that output said
second color signal and reading out the result from
said second horizontal output line.

15 6. An image pickup apparatus comprising:
a plurality of pixels arranged two-dimensionally;
and
addition means for adding together signals
20 produced by pixels that output the same color signal,
wherein said addition means performs addition in
such a manner that a line interval between pixels that
output first color signals and used for addition of
said first color signals, is smaller than a line
25 interval between pixels that output second and third
color signals and used for the addition of said second
and said third color signals.

7. An image pickup apparatus according to claim
6, wherein said addition means adds, between adjacent
lines, said signals of said pixels that output said
first color signal, and adds, between every other line,
5 said signals for said pixels that output said second
and said third color signals.

8. An image pickup apparatus according to claim
6, wherein said first color signal is a G (green)
10 signal, and said second and said third signals are R
(red) and B (blue) signals.

9. An image pickup apparatus according to claim
6, wherein said addition means adds signals of pixels
15 each having said first color filter, which are
positioned in an oblique direction, and adds signals of
pixels having said second and said third color filters,
which are positioned in horizontal and vertical
directions.

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10. An image pickup apparatus according to claim
6, wherein, said addition means changes a line used for
addition on a line basis.

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11. An image pickup apparatus according to claim
6, further comprising:

switching means for switching between means for

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independently reading said pixel signals and means for adding and reading said pixel signals for each color.

12. An image pickup apparatus according to claim 5 6, wherein a high luminance signal is formed by using said signals from said pixels that output said first color signal.

13. An image pickup apparatus comprising:
10 a pixel portion in which are arranged a plurality of pixel elements, each of which consists of a plurality of pixels arranged according to a predetermined basic color arrangement; and
reading means for reading signals of a plurality
15 of colors from said pixel elements, and for adding and scanning, on a same color basis, a signal from the same pixel elements and/or signals from different pixel elements,

wherein said reading means adds said signals from
20 said plurality of pixels so that a spatial color arrangement for each color before addition is the same as a spatial color arrangement for each color after addition.

25 14. An image pickup apparatus comprising:
a pixel portion in which are arranged a plurality of pixel elements that consist of a plurality of pixels

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arranged according to a predetermined basic color arrangement; and

reading means for adding and scanning signals of said plurality of pixels, and for reading signals of a plurality of colors,

wherein said reading means adds together a plurality of pixel signals so that a spatial color arrangement for each color before addition is the same as a spatial color arrangement for each color after addition, and

wherein at least one of said plurality of colors is provided by a color signal obtained by adding together signals produced only by pixels that are arranged in an oblique direction.

15. An image pickup apparatus according to claim 13, wherein said reading means performs thinning-out scanning of a plurality of pixel signals.

20 16. An image pickup apparatus according to claim 13, further comprising:

switching means for switching between a first reading mode for performing said adding and scanning to read signals, and a second reading mode for reading signals of all pixels.

17. An image pickup apparatus according to claim

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13, wherein said plurality of colors are for G (green),
R (red) and B (blue).

18. An image pickup apparatus according to claim
5 13, wherein said reading means adds signals of pixels
adjacent to each other in an oblique direction, which
output a first color signal, and adds signals pixels
adjacent to each other in horizontal and vertical
directions, which output second and third color
10 signals.

19. An image pickup apparatus comprising:
a plurality of pixels arranged two-dimensionally;
and
15 addition means for adding together signals from
pixels that output a same color signal,
wherein said addition means performs addition in
such a manner that an areas used for obtaining addition
signals are spatially overlapping each other.

20 20. An image pickup apparatus according to claim
19, wherein addition of signals from pixels that output
said same color is performed vertically and
horizontally in a pixel arrangement.

25 21. An image pickup apparatus according to claim
19, wherein said individual colors are for R (red), G

(green) and B (blue).

22. An image pickup apparatus according to claim
19, wherein said individual colors are for Ye (yellow),
5 Cy (cyan), Mg (magenta) and G (green).

23. An image pickup apparatus according to claim
19, wherein said addition means adds a plurality of
pixel signals so that a spatial color arrangement for
10 individual colors before addition has been performed is
the same as a spatial color arrangement for said colors
after addition has been performed.

24. An image pickup apparatus comprising:
15 a plurality of pixels that output a plurality of
color signals;
reading means for reading said plurality of color
signals output from said plurality of pixels; and
driving means for adding together said color
20 signals for each color, and for outputting the obtained
signals in the line sequential order.

25. An image pickup apparatus according to claim
24, wherein said driving means sequentially adds
25 signals on the same color basis.

26. An image pickup apparatus comprising:

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a plurality of pixels that output a plurality of color pixels; and

driving means for performing on said plurality of color signals, combinational addition for a first color and combinational addition for a second color, and for outputting, in the line sequential order, the signal obtained from the combinational addition for said first color and the signal obtained from the combinational addition for said second color.

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27. An image pickup apparatus according to claim 26, wherein said driving means sequentially performs the combinational addition for said first color, and the combinational addition for said second color.

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28. An image pickup apparatus according to claim 24, wherein said driving means outputs the signal obtained by addition via a same horizontal output line.

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29. An image pickup apparatus according to claim 26, wherein said driving means outputs the signal obtained by addition via a same horizontal output line.

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30. An image pickup system comprising:
an image pickup apparatus according to one of claims 1, 6, 13, 19, 24 and 26;
an optical system for focusing light on said image

pickup apparatus; and

a signal processing circuit for processing a
signal received from said image pickup apparatus.

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